OCT 4 1920

THE BOSTON
Medical and Surgical
JOURNAL

OFFICIAL ORGAN of THE MASSACHUSETTS MEDICAL SOCIETY and of THE NEW ENGLAND SURGICAL SOCIETY

$5 per Annum. 15c per copy
Vol. CLXXXIII, No. 13

THURSDAY, SEPTEMBER 23, 1920

Published weekly in Boston, at 126 Massachusetts Avenue

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PUERPERAL SEPSIS AND ITS TREATMENT.*

BY R. S. TITUS, M.D., BOSTON.

ALTHOUGH it is perfectly well recognized by the great majority of physicians that puerperal sepsis is a wound infection, there still exists much more sepsis than there should, and the treatment of puerperal sepsis, among many general practitioners, is not improving its mortality. The majority of older physicians stili adhere to thorough active uterine interference in all cases of febrile complications in the peurperium. This is due almost entirely to a lack of appreciation of the pathology and bacteriology of the condition. All treatment nowadays, in all types of diseases, depends upon a knowledge of the pathology of the disease and an understanding of the bacteriological reaction characteristic of each bacterium. When one has this fundamental knowledge to go on, the treatment must necessarily be a rational treatment.

Puerperal sepsis is as old as child-bearing. It has always existed and undoubtedly will always exist, but let us hope that its percentage will continually become less as the condition is better understood. Until Semelweiss, in 1847, told the world that puerperal sepsis was a disease caused by the introduction of dead material from without, nothing definite so far as etiology was understood. He worked before bacteriology was known and it was upon a vast clinical experience in the dead house, the delivery room and association with many students that he came to the conclusion that the unclean examining finger was the contaminating source. The simple procedure of chlorine disinfection of the hands lowered the mortality from puerperal sepsis in his clinic at Vienna in the first year of his régime to a point never before obtained. His great work was not appreciated until his death.

More modern advances in the etiology of puerperal sepsis are due almost entirely to bacteriology. We now know that it is not the introduction of dead material, but that it is the introduction of living bacteria into the genital tract at the time of labor that causes this scourge. We still must believe that the vast proportion of sepsis is so caused but it is only fair to assume that there are a few cases which do not fall under this heading. I refer to the patient who has never been examined in whom a possible extraneous contamination can absolutely be ruled out, who develops sepsis after delivery and dies. It is ignorance in

* Read before the Obstetrical Society of Boston, Oct. 21, 1919.

such cases to assume that she, too, must have become infected from without. The explanation of such sepsis may be found, (1) in the abnormal character of the vaginal flora existing at the time of delivery: (2) in a focus of infection from outside the pelvis.

It has been contended for some time that all vaginal secretions should be acid at the time of labor; that the acidity is due to an organism not unlike the lactic acid bacillus: that the presence of this organism in the vaginal secretion diminishes in numbers and virility pathogenic bacteria. It is also well known that all vaginas harbor strains of pathogenic organisms during pregnancy and then when this acidity is absent the virulence of these organisms is much increased. This fact alone may well explain, and rationally, sepsis developing in the unfortunate patient who has never been contaminated by outside infection.

There is one other class of septic cases whose cause lies outside the introduction of bacteria by vaginal examination. Ten years ago it was not known that a patient might become septic from tonsillitis. Now it is a definitely known fact that such exists. Why isn't it conceivable that the individual patient may have had at the time of labor a focus of infection somewhere else in the body which finds the engorged, theoretically traumatized pelvic organs a very likely spot for fresh infection? This is not an absolute fact, but there are rare cases in the practice of men who are surgically clean, in which infection does occur and in which it is at least plausible to assume that the outside focus may quite likely be the cause of the new infection. These latter two possibilities will cover but a few of the cases of puerperal sepsis.

It must still be inferred that it is the examining finger which carries with it by far the greatest proportion of puerperal infection.

It is not many years since pelvic infection has had in the minds of most men a place unlike that with which they held general surgical infection. They have even thought that the pelvis was a field of its own, following laws of its own, and not following the principles of general surgical fever.

Today, when the germ theory of disease is accepted throughout the world and when everyone believes that sepsis acts, irrespective of its location, in typical ways, it is unintelligent to assume any such premise. The reaction of tissues in other parts of the body to bacterial infection depends almost entirely upon the type of organism which is the invader; and such is so, such must be so, of pelvic infection. It is entirely unintelligent to assume that a streptococcus in the uterus will act differently or should be treated differently from a streptococcus in the arm, and *vice versa*. The streptococcus acts in just the same way, irrespective of the tissue, and consequently an intelligent appreciation of puerperal sepsis and its treatment must depend upon the rules that the individual organism has laid down for itself.

Puerperal sepsis is merely surgical fever and surgical fever by and large manifests itself in three different ways, depending upon the organism which it is invading. There are three large groups. The first: that of the hemolytic streptococcus, second that of the pyogenic organisms; and third that which manifests itself by decomposition. Hemolytic streptococci show a predilection for the blood, leaving behind them little or no local reaction. If a surgeon is unfortunate enough to prick his finger, contaminating it by a hemolytic streptococcus, the finger shows little or nothing but the constitutional symptoms which occur not infrequently as soon as twelve hours after the entry of the organism and always within thirty-six hours, are most active. The patient has a chill with temperature ranging from 104-105, extremely rapid pulse of 130-140. The finger shows nothing; consequently, treatment directed to the point of entry of the organism is of no avail. The disease is present in the blood, as is manifested by the extreme constitutional symptoms and the treatment should be directed toward the general system, the finger being entirely disregarded.

Such patients, if infected by a pure strain of hemolytic streptococci who die, show no pus; show almost no pathology so far as the finger goes, thus demonstrating the folly of local treatment. If this is true of surgery of the finger, why should it not be true of pelvic infection caused by the same strain of organism?

The typical history of a puerperally septic patient infected by a hemolytic streptococcus is something as follows: The first sign and symptom of the disease is usually a severe chill with subsequent rise of temperature to 105 or 106 and a rapid pulse. These occur very

acutely. The onset is in no way gradual. It may occur as soon as 18 hours after delivery; almost always before thirty-six hours, and it is fair to say that those cases so infected, showing the initial sign after forty-eight hours, are very rare indeed.

By palpation at the onset of the disease the uterus is normal; it is firm; it is not tender, and the lochia is unchanged. To be sure, the uterus unfortunately has been the entrance of the infection. The placental site of the uterus is a raw traumatized area. It invites infection and if there are organisms which can invade, it is only natural that this is the point that they should attack. But in the infection which shows these constitutional signs so quickly, the organisms penetrate the musculature of the uterus directly into the blood stream and it is in the blood stream that they are and not the uterus. Treatment directed to the uterus itself is illogical. There is nothing in the uterus to attack: the infection has got beyond the uterus by the time the constitutional signs have presented themselves and all treatment should be constitutional. Fresh air is the first essential. Such patients should be out doors if posible or at least in a room filled with fresh air and sunlight; they should have all the nourishing food they can take; plenty of fluids; ordinary cartharsis and sedatives to induce sleep. The high temperature is controlled by cold baths and alcohol sponges rather than by anti-pyretics and empirically the patient is sat up in bed to favor drainage. Then simply because of the possibility of infection being a mixed one, ice and ergot; ice to the fundus and ergot by mouth in drachm doses are both used empirically for the same reason; to favor involution and to hasten drainage. The patients who die of this infection die of cardiac failure and the pulse in consequence is the most important guide as to the patient's condition. By no means all of these patients die. Those who die will die within a week, and thus by that time, if the patient is going to get better, the pulse begins to show its downward tendency, and as is true of all pure hemolytic infections autopsy reveals no pus.

The main fact is that a constitutional infection, a blood infection, should be treated constitutionally. The point of entry bears no real importance, for by the time the symptoms appear the organisms are in the blood. Tonsils causing hemolytic infection are not taken out, they are left alone. Why is it any more logical to treat locally a uterus through which the organisms have gone?

Pyogenic organisms invariably show a local infection first, even though they may later become general septicemia. In consequence, the constitutional symptoms are slower in appearing and usually more gradual in their ultimate reaction. It is perfectly analogous to compare an ordinary septic infection on the finger or arm with an infection by a like organism in the pelvis. Any infection on the finger or arm may have redness, heat, induration and swelling. It may go no further. On the other hand, this local condition may develop pus, in which case there is definite fluctuation or pointing of the abscess. Another infected finger may show the early signs of infection but may not form local pus but extend up the arm with a cellulitis lymphangitis and enlarged glands in the axilla. This condition may go no further or it may spread into the general circulation, the patient becoming generally septic, and lastly, may develop pyemia.

If the organism infecting the finger is not a virulent one the most that can come of this infection is a localized abscess. Many such infections result in nothing but redness and swelling and go down without the formation of pus. If the organism, on the other hand, is more virulent it is very apt to spread up the arm and it will develop signs of cellulitis lymphangitis axillary infection and general sepsis, as the case may be.

It is unreasonable to suppose that the constitutional symptoms of these various grades of infection by pyogenic organisms are equal in intensity. That which causes nothing but localized signs without pus formation will give almost no constitutional symptoms. That which shows fewer local signs but does spread up the arm and eventually into the general circulation, will show very serious symptoms and so it is in the pelvis. All pyogenic organisms do not react the same; some cause serious constitutional reactions and others almost none at all.

The uterus and the arm are again analogous. Some uterine infections of pyogenic source never get beyond the uterus, some extend by continuity into the round ligament, or gravitate to the fossa of Douglas. Some follow the lymphatics up to the kidney, and develop perinephritic abscess; others get into the blood,

forming phlebitis or general sepsis; some attack the tubes and ovaries. Whether they remain in the uterus or extend outside depends upon the number and virulence of the infections against the resistance of the patient. This resistance of the patient is really "*nature*," and nature's defence against the invader is the pathology of infection, a leucocytic wall about the point of infection.

The common pyogenic organisms that infect the genital tract are the streptococci, the staphylococci, colon bacillus, pneumococci, gonococci, and diphtheria organisms, the last of these is not commonly seen, although it is a well established fact that diphtheria can infect the vagina at the time of labor.

The streptococcus, of course, is the most virulent of the various types of pus-forming organisms. Its onset is more abrupt than the others, but its initial rise in temperature does not occur so soon after labor as does that of the hemolytic streptococcus, but when it does occur, it is very apt to be preceded by a chill, the temperature immediately after rising abruptly to 103 or 104. This usually does not occur until thirty-six hours and may be deferred as long as seventy-two after delivery. The organism being in the uterus showing its first manifestations locally will result in definite *uterine changes*. The uterus is soft and larger than in the normal case. It is apt to be tender and the lochia will soon show some pus. One must think of the pathology of the condition before one attempts treatment.

Nature in her attempt to localize this condition in the uterus as it does in the finger, to prevent its spread by continuity or lymphatics, surrounds this initially infected area with a leucocytic wall. If the organism is not too virulent, if nature is adequately prepared to resist the infection, this leucocytic wall is sufficient to prevent the spread of this infection to other areas. What can we do to prevent this, even though nature were unsuccessful in her attempt to localize it? The curette was the instrument resorted to in all types of uterine infection by the medical profession a generation ago. To them all febrile conditions occurring in the puerperium were associated with abnormal material in the cavity of the uterus. It was this material which was the cause, in their minds, of the febrile state and they must remove this material if their patients were to recover. By experience they saw many of these cases curetted with the removal of something that they could see, something that was absolutely tangible, and having no adequate knowledge of bacteriology, the inference in each case was that this material must be the etiological factor. In those cases in which the curette succeeded in removing nothing, it was felt that the material must be there, even though they could not get it out.

Now let us see how rational the curette is. Nature attempts to localize the inflammatory area by a leucocytic wall; pathology teaches when the curette, no matter how gently used, goes into the infected uterus, it breaks down this leucocytic wall in its attempt to remove the infection and lays open new areas for further infection. Consequently the curette defeats its own purpose. It makes a bad matter very much worse.

Now as to the rationale of antiseptic douches. Many sorts have been used from time to time: corrosive in the strength of 1-3000; alcohol, 70%; lysol, etc. Bacteriologists teach us that a solution of one to three thousand corrosive takes many minutes to kill the ordinary pyogenic organism when it is lying in the solution. The same is true of alcohol. When a douche is used, the return flow will make up almost the entire amount that has been used, not more than an ounce or so will remain in the uterus, and when this solution mixes with blood coagulation occurs, searing off the uterine cavity. If this is so, and isn't it true, how many organisms that are doing harm in the uterine mucosa are attacked by this solution sufficiently to destroy them? Douches given for the purpose of washing detritus from the uterine cavity are rational; douches to combat organisms in the uterine mucosa cannot expect to attain the result desired. So frequently, following intrauterine douches, a severe constitutional reaction is seen that it seems hardly wise to resort to these douches unless something definite for the patient's good is to be obtained.

If nature successfully combats the infection and localizes it in the uterine wall, the patient will get well with no other surgical treatment. Fresh air, as in the severe hemolytic invasion, is the most important single detail; plenty of good food, catharsis, alcohol baths, and general hygiene, just as anyone would treat any medical disease, until the formation of pus had taken place, which always requires drainage. These patients, too, are sat up in bed, ice to

the fundus and ergot empirically and nothing else.

If the disease remains localized in the uterus and it is not spread by uterine injury, it will run its course from a few days to several weeks, depending upon the virulence of the invading organisms and the patient's resistance. One should watch during the convalescence of such a patient for signs of parametric infection. They show by a rise in temperature after it has been somewhat lower and pain and tenderness by palpation over the affected parametrium. It is fortunately true in puerperal infection of the pelvis that nature surrounds the affected site with layer upon layer of exudate, attempting to localize such infections in the pelvis. The result is, as is not true in appendicitis, that the invasion of the general abdominal cavity is unusual. The treatment of the infection that has gone outside the uterus, showing its localization on one side or the other, is ice over the site, careful watching of the patient, vaginal examination from time to time to watch for the gravitation of pus into the fossa of Douglass. When this occurs, vaginal puncture will relieve the abscess. Going into the abscess from above is almost never indicated and usually is quite hazardous. Infections that go outside the uterus may follow the round ligament to the abdominal wall where localized abscesses may point and when they do surgery is indicated to evacuate them. The lymphatic chain that follows the ureter to the kidney oftentimes is invaded and perinephritic abscesses following puerperal sepsis are not uncommon and indicate drainage as does pus anywhere else in the body. The blood stream becomes infected, general septicemia results, if nature's leucocytic wall has not been sufficient to localize the condition. The patient must be treated for general sepsis and whether she recovers or not depends much upon her resistance. Those cases which live months with sepsis are often of the pyemic variety; each abscess as it develops indicates surgery, but until an abscess is definitely diagnosed surgery is of no avail. These septic cases are medical, as is pneumonia until it develops an empyema, until they develop pus. Surgery in the puerperium means the evacuation of pus; it holds almost no other function.

The staphylococci characteristically are more gradual in their onset than streptococci, the temperature taking several days to reach its height before maintaining its level. It is often of the stepladder character. The pulse ranges from 110 to 120. The uterus in these cases on the third or fourth day is not hard, it is not small, it is tender and the lochia contains pus. Intrauterine treatment, either the douche or the curette, is no more rational here than in the previous type. Nature's walling off process is less destructive and far safer. The empirical treatment—fresh air, elevation of the head of the patient, hygiene, ice, and ergot, will maintain the patient's resistance, favor localization processes in the pelvis, aid drainage, and do, what is most important, no harm.

This condition may last a few days with a subsequent drop to normal of the temperature, providing, of course, that nature has been successful in her attempt to prevent further infection.

On the other hand, infection into the blood stream by continuity into the surrounding tissues, by the lymphatics to the kidney may occur. These extensions are to be treated symptomatically just as the invasion of bacteria in any other part of the body is to be treated until localized pus develops, and this often never will occur, when they are to be treated surgically.

No one thinks nowadays, when a streptococcus throat has resulted in a septicemia, to remove the tonsils. To be sure, the tonsil is the source of the infection, but when the streptococcus is in the blood, treatment directed to the tonsil is of no avail and so with the uterus. If there were any means of dealing intelligently with early uterine sepsis locally before extension could occur, it would be the only rational treatment, but pathology teaches us that nature's defense is far more adequate than any intrauterine manipulation that we know of today.

With colon the distinctive difference is the odor of the lochia; it is distinctly foul because of the characteristic of the organism. The pads in the streptococci and staphylococci organisms of the pyogenic variety show pus and while this pus is strong in odor it is not the foul odor of the colon.

The treatment of this type of infection is in no way different from that of the previous ones. Don't do anything to the patient for the mere sake of doing something. Be guided only in active interference by the definite knowledge

that good is being done and never do something because inertly you say it can do no harm.

Pneumococci have the same general characteristics as other pus-forming organisms. The lochia are not foul.

Gonococcal infections are of two large types, one the active case of a new infection due to the presence of gonococci in the vagina at the time of labor; secondly, the lighting up of an old process in one tube or the other which has been lying dormant during pregnancy. The second type is apt to show reaction on the third or fourth day with definite pain and spasm over the affected part. Ice applied there will usually result in no further damage, fever persisting for only a few days.

Of course it is theoretically possible and sometimes it occurs that this old process may become very active, forming pus or developing with some other organism into a septic process in other parts of the body and occasionally even septicemia, but it is again a medical disease until the evacuation of pus has been distinctly indicated. Infection resulting from an active gonorrhea in the vagina at the time of labor is almost always associated with other organisms, colon or staphylococci and occasionally the streptococci, but the treatment in no way differs from what has previously been laid down.

The occasional diphtheria infection is treated as we treat diphtheria invading the throat.

Number three, the putrefactive saprophytes, are almost constant inhabitants of the vagina. They need dead material upon which to live. After delivery, blood clot, placental tissue and membranes are ideal media for their growth. In considering the treatment of such infections, one must ask the question, "Does the saprophyte cause a serious infection? If such is the case, active treatment may be indicated. Anyone who has delivered many women knows the possibility of the retention of membranes. These membranes are left in the uterus, either free or adherent. If they are adherent, it is not an easy matter to remove them; if they are free, won't they come away, and if they do not come away, are they serious? It is only fair to presume that in the average out-patient clinic conducted by medical students who are having their first experience in obstetrics that the retention of part or all of the membranes must be a frequent occurrence. If this is frequent and if the retention of membranes is serious, the only conclusion that one could draw is that the mortality and morbidity in a clinic so conducted would be high. In the Boston Lying-In Hospital neither the morbidity nor the mortality is high and it is less high today than it was in the days when intrauterine interference was the routine treatment. The most that can be said of the retained material is that it offers, besides a medium for saprophytic growth, a medium also for the growth of pathogenic organisms. This undoubtedly is true and we do infer that the vaginas of pregnant women do contain some pathogenic organisms, but is there any better way of getting these organisms into the uterus than by manually taking them there? In Caesarean section the removal of adherent membranes even with the uterus spread open before our eyes, is very difficult and oftentimes almost impossible. How much more difficult, how much more impossible it would be to attempt from below to pull such adherent membranes from the uterine wall and in the process of attempting to pull these off the gloved hand goes through the vagina, which cannot be sterilized, and carries with it bacteria which may have a chance of doing harm inside the uterus. If the membranes are lying loose in the uterus and are got by the entering hand, would they not soon be extracted by normal uterine contractions? Hence does it seem wise to subject a patient to possible harm for a condition which we may not be able to treat, and which nature successfully controls?

Now, saprophytic infections are of two sorts; one sapraemia and the second plain saprophytic infection. Sapraemia is the condition evidenced by constitutional symptoms which are caused by the absorption into the circulation of elements of decomposition. The saprophytic infection is merely the eating away of dead material by saprophytes with its subsequent pus discharge. All sapraemias are saprophytic infections, but many saprophytic infections are not sapraemias. By that I mean that if the material decomposed by the saprophytes drains from the uterus there is no material inside the uterus from which absorption into the general circulation can take place. In other words, drainage is efficient. Now, the difference between saprophytic infection and sapraemia is a question of drainage and not a question of the amount of material that the saprophyte has to live upon. If drainage is inadequate, the patient's temperature may rise as high as 103

and the pulse may range from 100 to 110. The uterus is big; it is soft; it is somewhat tender. The lochia are very foul. Simple massage of the uterus will oftentimes push out a clot or material at the internal os with the result that drainage from then on is perfectly competent. In such cases the temperature will go to normal and remain so. The routine treatment of such cases is elevation, ice and ergot and in the case in which we have very foul pads with no rise in temperature there is nothing to do. Nature is doing all that is necessary.

Logically the sapraemia case is the only one which offers any argument for intrauterine manipulation. Here if one wishes to use a douche for the purpose of mechanically washing out material and does it for that purpose alone, no one can say but that the treatment is logical, but inasmuch as elevation, ice and ergot will accomplish this same result, perhaps taking a day or so longer to do it and subjecting the patient to no possibility of danger, is it worth while to run any chance of carrying true bacteria into the uterus for the treatment of a condition which can be successfully combated by conservative measures? I feel strongly that intrauterine manipulation for sepsis is never indicated; often very harmful and has practically nothing to be said in support of itself.

There is one sequela of the saprophytic infection besides the possible superimposed infection of pyogenic organisms and that is the subinvolution of the uterus with its subsequent prolonged bloody discharge. Cases in which material has been left at the time of labor may often show continued red lochia two or three weeks after delivery, with a uterus which is bigger than normal. This bleeding is due to some foreign substance in the uterus and it will persist until this foreign substance is removed. This complication is not uncommon and it is not common. The treatment in all such cases is rest in bed, ice and ergot, and if the temperature has been normal for a week or ten days and the lochia does not cease under inactive treatment, curettage is indicated and it is in this condition that the curette holds its only rational position in postpartum obstetrics today.

Conclusions. Puerperal infection is bacterial infection. Organisms gain entrance, first by vaginal examination; second, by the presence of an abnormal vaginal flora at the time of labor; third, by extension from foci of infection elsewhere in the body. The three types of puerperal infection depending upon the organism are, first, hemolytic streptococcal infection; second, pyogenic infection; third, saprophytic infection. The treatment of each type depends upon the bacterial reaction and the knowledge of its pathology. By and large, leave it alone. The curette is dangerous. The antiseptic douche unintelligent. The conservative treatment rational and harmless. Surgery plays its part only when the infection has produced localized pus, and then the old-time surgical principle of the evacuation of pus obtains. Vaccines and serums have had their try and they have been found wanting. The future holds its hope first in aseptic preparation of the patient, absolute cleanliness of the operator. In this way, to lower the percentage of infection to its lowest possible point. Next, conservative treatment to do no harm rather than to go on the supposition that some good may come from interference and in the specific serum for each individual case based upon the success of the treatment of type four in pneumonia. Theoretically, vaginal smears and cultures of a pregnant woman taken soon before labor may point out those which contain harmful bacteria and in consequence, some method of making these harmful bacteria harmless may be evolved.

CORRELATION OF DATA IN CASES SEEN AT THE PSYCHOPATHIC DEPARTMENT AND FOXBORO STATE HOSPITAL.*

BY LAWSON G. LOWREY, A.M., M.D., BOSTON,

Chief Medical Officer, Psychopathic Department, Boston State Hospital; Instructor in Neuropathology and Psychiatry, Harvard Medical School.

DATA have elsewhere been presented concerning the diagnoses in 419 cases seen at the Psychopathic Department of the Boston State Hospital and transferred to other institutions. At the present time, data are being compiled on about 700 more such cases and the results will shortly be published. This, however, is the first opportunity I have had to make an intensive study of the diagnostic standards and opinions of a single institution as compared with those of

* Presented at the opening of the Laboratory at Foxboro State Hospital, June 2, 1919.

the Psychopathic Department. It is important always to submit to the careful scrutiny of one individual the facts and interpretations of the facts applying to any group of cases, since in that way an adequate idea of differences in standards and in interpretations is most easily secured.

The Psychopathic Department stands in a peculiar position in this respect. Its records are continually being critically scrutinized by the medical staffs of other institutions, but not in a particularly systematized fashion, the result being that all too often errors of omission and commission are not brought to the attention of the staff at the Psychopathic Department, nor are reasons for differences in points of view analyzed. Hence, this opportunity to analyze the changes in diagnosis between these two institutions seems to me of particular importance.

The data are drawn from 231 cases observed at both institutions during the past seven years. These are all the cases which we could ascertain had been observed in both institutions. Of the entire group, 17 cases, or 7 3/10 per cent., received no diagnosis at the Psychopathic, though all except two received a definite diagnosis at Foxboro. Excluding these 17 cases, we find that the diagnoses agree in 165 cases, or 77 per cent., and vary in 48 with one case doubtful. This is precisely the percentage of agreement found in previous study where all institutions were combined. If we include the undiagnosed groups, which is hardly fair to the figures, we find 75 per cent. of agreement.

TABLE I.

PSYCHOPATHIC DIAGNOSIS		FOXBORO DIAGNOSIS AGREES	FOXBORO DIAGNOSIS DISAGREES	PER CENT. AGREES
Dementia precox	115	102	12	89.5%
Manic depressive	29	20	9	68%
General paresis	15	15	0	100%
Neurosyphilis	4	3	1	75%
Acute alcoholic hallucinosis	7	5	2	71%
Psychosis with mental deficiency	4	0	4	0
Mental deficiency	5	4	1	80%
Senile dementia	4	4	0	100%
Arteriosclerotic psychosis	6	4	2	67%
Involution melancholia	4	2	2	50%
Presenile psychoses.	2	1	1	50%
Psychoneurosis	1	1	0	100%
Psychosis with org. Br. disease	1	1	0	100%
Paranoiac condition	6	0	6	0
Prolonged delirium tremens	1	0	1	0
Chronic alcoholism	1	0	1	0
Paraphrenia	3	2	1	67%
Korsakow's psychosis	1	1	0	100%
Alcohol and manic depressive	1	0	1	0
Arteriosclerosis and senile dem.	1	0	1	0
Psychogenic psychosis	1	0	1	0
Psychosis with C.P.I.	1	0	1	0
TOTAL	213	165	48	77%
Alcoholic hall. + G.P.	1	1±	±	77%
Unclassified	17	2	15	
GRAND TOTAL	231	168	63	

In Table I are presented the data concerning agreement and disagreement in diagnosis according to groups. The doubtful case, shown in the table, is one called "alcoholic hallucinosis and general paresis" at the Psychopathic, and "general paresis with chronic alcoholism" at Foxboro.

This woman of 57 had a long alcoholic history, marked auditory hallucinosis (voices threatening her, etc.), a depressed emotional tone and the physical and laboratory signs of paresis. By the time she was transferred to Foxboro, the hallucinosis had cleared up and at the present time the patient is out of the institution on visit.

It is possible that the correct diagnosis is syphilitic paranoid state, a condition first described by Plaut, and recently mentioned by Hoch in a criticism of one of my papers. I have seen three cases which almost certainly belong to this group, and another case of the same type is quoted further on in this paper. It is probable, however, in view of the excessive use of alcohol that in this case we have a non-symptomatic general paresis with an alcoholic psychosis added.

Table II presents all of the data in readily accessible form, showing for each group the total of the diagnoses made at the Psychopathic and how they were changed at Foxboro.

Certain of the apparent errors appear on analysis to represent merely verbal divagations, although in the majority of instances such verbal non-agreement represents an underlying basic difference in etiological conceptions. Thus the changes from manic depressive to involution melancholia (three cases) represent probably a somewhat different standard of viewing the depressions of the involution period. In connection with this I have reviewed Dreyfus' analysis of involution cases, due to which the idea has spread that involution cases should all be classed as instances of manic depressive psycho-

TABLE II.

DIAGNOSES AT PSYCHOPATHIC AND AT FOXBORO.

	Psychopathic Diagnoses	Total	Foxboro Diagnoses: 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	24	25	26	27	28	29	30
1	Dementia praecox	115	102	6	2		1		4																			
2	Manic depressive	29	4	20						1		3										1						
3	General paresis	15			15																							
4	Neurosyphilis	4				3	1																					
5	Acute alcoholic hallucinosis	7					5																1	1				
6	Psychosis *c* mental deficiency	4		1					3																			
7	Mental deficiency	5						1	4																			
8	Senile dementia	4								4																		
9	Arteriosclerotic psychosis	6	1							1	4																	
10	Involution melancholia	4	1	1								2																
11	Undiagnosed psychosis	17	5	4					2		2		2	1											1			
12	Presenile psychosis	2	1											1														
13	Psychoneurosis	1													1													
14	Psy. *c* organic brain disease	1														1												
15	Paranoiac condition	6	2							1										1						1		1
16	Delirium tremens	1																	1									
17	Chronic alcoholism	1	1																									
18	Paraphrenia	3																		2						1		
19	Korsakow's	1																			1							
20	Alcohol and manic depressive	1							1																			
21	Senile dementia and arteriosclerosis	1								1																		
22	Psychogenic psychosis	1	1																									
23	Psy. *c* const. psy. inferior.	1	1																									
14	Infectious psychosis	0																										
25	Epileptic-alcohol equiv.	0																										
26	Toxic-lead	0																										
27	Alc. halluc. dem.	0																										
28	Alcoholic paranoid	0																										
29	Alcoholic delusional	0																										
30	Paranoia	0																										
	TOTALS	230	119	32	17	3	7	1	14	8	6	5	2	2	1	1	0	0	1	3	1	1	1	1	1	1	1	1

1=Alcoholic hallucinosis + G. P. to G. P. + chr. alcoholism.

sis, and I find that this analysis is not convincing. Too many cases died early in the course of the disease or terminated in dementia. It is probably true that the majority of the depressed cases of the involution period are of the manic depressive type, but it is my belief that cases with hallucinations and marked delusion formation should be regarded as cases of manic depressive only when the entire life history of the individual bears out such a conception.

Some of the changes which seem at first to be verbal changes probably represent cases in which different periods in the evolution of the mental state were seen and not sufficient weight was given to the preceding observations. Thus, in the changes in the group of the psychotic feeble-minded, in three cases the Psychopathic diagnosis of "psychosis with feeblemindedness" was changed to read "feebleminded." In two cases the latter diagnosis either expresses the same idea as our psychosis with feebleminded," or else very real instances of psychotic conduct were given no weight in this final diagnosis. In a third case, called by us "feebleminded with chronic alcoholic deterioration," and not regarded as insane, the matter is clearly one of terminology. Of course, if there is or seems to be a deteriorating process in a feebleminded person, then the diagnosis is certainly phrased only with great difficulty. A change of the opposite type, in which we made a diagnosis of feebleminded and raised the question of dementia precox, is regarded at Foxboro as a case of "psychosis with feeblemindedness," which is unquestionably correct and apparently, from their record, the psychosis is dementia precox.

Of course, in the majority of groups the number of cases considered is too small to make any very accurate statistical evaluation. Possibly because of this small number of cases certain changes in diagnosis, which we have elsewhere found to be very common, occur very seldom in this series. So, changes from senile dementia to arteriosclerosis, and *vice versa*, are rare. Of course these changes are most commonly due to variation in the evaluation of indirect evidence. From the study of autopsied cases, it is clear to me that diagnoses in these groups are wrong with surprising frequency.

It appears that there are at least three types of changes in diagnosis. There is: first, an essentially verbal change, representing no real difference in diagnostic standards; second, where the evidence to be evaluated is so indirect that variations in standard and in correctness of interpretation are very common; third, the very important group in which the real evidence of divergent standards exists and calls for close study. Even here, unfortunately, it often occurs that a portion of the deviation is due to carelessness or improper interpretation: *i.e.*, an interpretation which is not justified by the facts at hand.

When such cases are excluded, there still remains an important series of cases for analysis. Of course, all too frequently we solve our puzzling problems on the basis of outcome, but it seems to me we should be very careful in applying this standard to diagnosis, since trusting too much in it will lead to carelessness in case study and in the more important phase of symptomatic diagnosis.

The best method of analyzing the changes and the reasons for them in the group of cases at hand is a rapid survey of the changes in the various groups.

Dementia Precox: In six cases the diagnosis was changed from dementia precox to manic depressive. In three of these cases the record made while at the Psychopathic presents definite signs of schizophrenia, so that the diagnosis would seem to be symptomatically correct, but not verified by longer observation and the outcome. In the fourth case, the Psychopathic record is not complete because of the difficulty of examination of the patient. The fifth was an excited case where the difficulties of differentiation are notorious; and the sixth very interesting case is here briefly quoted:

A man of 29, admitted to the Psychopathic on March 13, 1917. Two brothers had previously been at the Psychopathic; one with a diagnosis of psychoneurosis, the other with a diagnosis of manic depressive. The patient was sent in because he could not work for lack of concentration, noise of great machinery filled his head, his cap hurt his head. He had crying spells. The voices began crying in his head. After he read "Weltschmertz" his heart felt like a rose growing and blooming, then it began to fade and to fall away and the center burned like the sun itself. He talked rapidly, his face was bright, he seemed happy. He had written a drama, a very disconnected thing, called "The Rise and the Fall of Man." On examination he revealed a sex history of masturbation, homo-sexuality and promiscuity. He gave a symbolic interpretation of his rather vivid auditory and visual hallucinations. He had some poorly formed political concepts of very peculiar nature. His

emotional tone was unstable, though emotionally depressed. At staff meeting his ideas were quite fantastic. The early hallucinations had disappeared. There was a possibility of previous attacks.

By exclusion we reached the diagnosis of dementia precox. At Foxboro the provisional diagnosis was dementia precox. He was regarded as showing "intellectual, affective and volitional deterioration." The examination revealed much the same as that at the Psychopathic. He became rather markedly depressed and then had a definite period of excitement, although the characteristics of the mania were not clearly those of manic depressive. However, he improved and for a year has been out on visit, working and doing quite well. The confirmed diagnosis of manic depressive is, therefore, based on the seeming recovery. As symptomatic analysis at both institutions pointed to a schizophrenic process, it is necessary to point out that the present condition may be only a remission which we know to be fairly common in precox. One valuable point brought out is that what we may call intellectual, affective and volitional deterioration is not always necessarily so. In not a few cases such deterioration is only apparent and is the result of an active disturbance in one or all of these fields.

In one case the diagnosis was changed from precox to alcoholic hallucinosis, and our record makes no statement regarding the alcoholic history. The nature and content of the hallucinosis, together with the emotional reaction, is much more like alcoholic hallucinosis than precox. It is quite important that we should not depend on the history of alcohol as the only means of differentiating between these two conditions. We may thus make more errors in diagnosis, but we shall also improve our attention to the relationship between symptoms in the various cases.

In the four cases with changes in diagnosis from dementia precox to mental deficiency, it is worthy of note that none are to mental deficiency with psychosis.

Analysis of the Foxboro and Psychopathic records in these cases shows that in one case we are apparently dealing with mental deficiency or dementia simplex, a notoriously difficult differentiation in an adult. One case seems to me dementia precox on a basis of feeble-mindedness; another has not been, from the history, feeble-minded, and I believe dementia precox to be the correct diagnosis. The fourth very interesting case is quoted in some detail:

This man of 26 was sent to the Psychopathic Department February 18, 1919, from the municipal court. His father is a spiritualistic doctor. Patient had been in Boston for two weeks. He stole a coat at his place of employment and beneath it wore a lady's coat. At the Psychopathic he was quiet, rather sullen, suspicious, evasive, overbearing in manner, not very accessible. His memory was quite good. He claimed to know all that was going on at home; told of receiving messages from home by spiritual communication. He was always hinting at mysterious powers, but was very evasive about them. His attitude was quite typically schizophrenic. He told conflicting and fantastic stories, including one involving a kidnapping of his brother. At Foxboro, the inability to demonstrate character change, deterioration, delusions or hallucinations was considered to rule out precox, though a happy indifference, egocentricity, boastfulness, fabrication, and absence of memory defect and poor and erratic judgment were advanced as arguments for moronity. These are precisely the points I would urge in favor of precox. Here, then, is a case in which the facts do not particularly differ but in which the interpretation is widely at variance. Eventually, I am sure, the diagnosis will be cleared up and will probably be dementia praecox, or possibly pseudo-logica fantastica.

The interesting changes in diagnosis from dementia precox to general paresis and to juvenile paresis involve two cases worth quoting, the one because it is apparently one of the rare cases of syphilitic paranoid condition; the other because of the difficulty in arriving at any diagnosis.

A man of 50 was brought to the Psychopathic Department March 28, 1915, because he went twice to a church for protection from a large crowd of people who were following him. In the admission office he at once wished to know if he was to be killed. On examination he was oriented, the memory was good. School knowledge apparently retained. There were numerous delusions of at least two years' duration. He was very apprehensive, hallucinated, emotional tone schizophrenic. He had many ideas of reference and was somewhat grandiose.

Physically, there were Argyll-Robertson pupils, exaggerated reflexes, and a typical serology of paresis.

Because of the mental picture, a diagnosis of dementia precox, paranoid, was made and he was sent to Foxboro, where he continued hallucinated and deluded, and with physical and

serological signs as given above. At present (1919) he is actively employed each day and does not show the characteristics of general paresis to any marked degree, although his hallucinations and delusions continue. This is, apparently, a typical case of syphilitic paranoid condition.

The other case, a boy of 25, was twice observed at the Psychopathic Department, once at the Rhode Island State Hospital, and once at Foxboro. A definite diagnosis between dementia precox and manic depressive has never been made at any, though we are now fairly certain of dementia precox. The interesting point is that at Foxboro a diagnosis of juvenile paresis was made on the basis of the mental and physical findings; rapid deterioration, following grandiose ideas; poor attention; circumstantiality; partial disorientation; calculation, writing and speech defects; fantastic, expansive delusions; auditory hallucinations; egotistic attitude and very slight physical signs. However, the absence of any serological findings and the failure of progression of physical signs during four years, seems to me sufficient to rule out juvenile paresis, while the more obvious schizophrenia observed this year seems sufficient to establish the diagnosis of precox.

Manic Depressive. The second large group of cases is the manic depressive, and it is interesting to find that, whereas the Foxboro diagnosis agrees with the Psychopathic diagnosis in practically 90 per cent. of cases of dementia precox, the agreement is only 68 per cent. in the case of manic depressive, a rather striking reversal of figures of earlier years and agreeing with the figures found in my recent study.

The most important changes here are the changes to dementia precox, since those to involution melancholia have been sufficiently discussed above. Three of the four cases in which the diagnosis was changed from manic depressive to dementia precox are clearly from the Psychopathic records schizophrenic, and the diagnosis of manic depressive should not have been made. The fourth is a case in which schizophrenic features did not clearly appear during the stay at the Psychopathic, and it is possible that new developments or the outcome have been the deciding factor in the diagnosis. In the other three cases our interpretation was erroneous. The case in which the diagnosis was changed from manic depressive to senile dementia is very interesting, since when seen by us this woman had a good memory, was correctly oriented, was definitely depressed and retarded, but had had no previous attacks, so that this case possibly represents one in which the first signs of the approaching dissolution were to be found in depression.

Cerebrospinal Syphilis. In the one case in which the diagnosis was changed to acute alcoholic hallucinosis, our record (1916) shows an alcoholic history, a poor memory for recent events, auditory hallucinations, delusions of persecution and of reference, apathy and indifference, with depression at times. The neurological examination and the Wassermann reaction in blood and spinal fluid were negative, and the diagnosis of neurosyphilis was based on the following cerebrospinal fluid data: albumin increased, globulin increased, cells 21, gold reading 0 0 1 2 2 1 0 0 0 0. The six days' stay at the Psychopathic did not give time for further study. Although the patient is now well and working, one wonders what the future will show, in view of the spinal fluid signs of an organic nervous disease. Certainly, such findings are extremely rare in the alcoholic group in the absence of syphilis.

Acute Alcoholic Hallucinosis. One case was given the diagnosis "Epilepsy-alcoholic equivalent in a case of alcoholic hallucinosis" at Foxboro. It is evident that we agreed on the alcoholic side of the case, but Foxboro believes there is an underlying epileptic personality as a basis for the alcohol, and so extends the diagnosis further back into the fundamental personality trends underlying psychotic manifestations.

Another case was called toxic psychosis (lead). We had no evidence of any lead encephalopathy. Such cases usually show symptoms of dementia rather than of recoverable paranoid type. Accordingly, I am not quite convinced that the second diagnosis is correct.

Other Psychoses. With respect to the psychoses of the involution period, it is quite clear from even a cursory survey of cases arising then, that a variety of types is encountered. Whether all of these diverse pictures are to be regarded as basically one disorder, is a question which I am not prepared to answer. Theoretically and statistically, there is ample justification for believing that several types of psychoses may arise in this period. Accordingly, all cases should be carefully scrutinized

to determine if they are of some other type than the so-called involution melancholia, and this diagnosis should be reserved for cases characterized by the predominance of depression. The more common types of psychosis encountered in this age period are dementia precox, manic depressive, presenile delusional and a group of cases which cannot better be diagnosed than paranoic conditions. Hence, no special quarrel can ever be raised with the diagnoses of the groups with onset in this age period, so long as such diagnoses are based on thorough-going symptom analyses and interpretations.

Another very difficult group, from the standpoint of diagnosis, is the paranoic group. We deal here with a wide range of possibilities, since any group of mental disorder may be characterized by paranoid symptoms. So the term "paranoic condition" should be, as it is, reserved for those cases in which no other diagnosis can be made. Incidentally, such a diagnosis is called a diagnosis only by courtesy, since what we do is to give a clinical description without particular etiologic or pathologic ideas in mind. The term formerly used, "undiagnosed paranoid state," really expresses what we do in the way of diagnosis.

Of the various cases in which a diagnosis of the type of paranoid state was made, after the Psychopathic had failed to make such distinction, one is quite striking. This colored woman of 63 was admitted to the Psychopathic, October 24, 1914, because of a sudden excitement. For ten years she had had facial neuralgia, and now there was marked arteriosclerosis. While in a hospital, waiting for operation, she developed ideas of reference and possible auditory hallucinations. At the Psychopathic the ideas continued. Memory was only slightly impaired. There was a positive Wassermann reaction in the blood serum. At Foxboro, the patient continued hallucinated and deluded, and the diagnosis of senile dementia was made. If senile dementia in this case means the simple deterioration type, then the diagnosis is incorrect. There are three diagnostic possibilities: senile paranoid condition, arteriosclerotic paranoid condition, and a syphilitic paranoid condition, of which the first is probably more nearly correct.

Other changes are scattered and need no particular comment, but one further case deserves special mention: This woman of 35 was at the Psychopathic for over a month, in 1918. She had been for three years very unhappy over an unfortunate love affair, and could not rid herself of thoughts of the man. She lost her ambition and interest, though she had kept on working, and made many demands for sympathy. She then began to complain of an enemy who spread defamatory tales about her. No definite ideas of persecution were obtained, and no hallucinations. A diagnosis of psychogenic psychosis was made. In February, 1919, at another institution, she first showed some excitement and began to elaborate delusions around a physician at the Psychopathic. Hallucinations in many fields appeared; there were many delusions and conduct disorder developed. Transferred to Foxboro, the condition continued there. She was very resistive, impulsive, assaultive, and hallucinated. She became stuporous and died of broncho-pneumonia, and a diagnosis of dementia precox seems quite correct.

Finally, we have a group in which the Psychopathic failed to arrive at a diagnosis. All such cases are of great interest both theoretically and practically, and a very great advance may be expected from a careful study of such cases. The diagnoses made at Foxboro in this group seem to be eminently proper. The two cases which remain undiagnosed do so because of language difficulty.

SUMMARY.

We can then summarize this report by saying that the diagnostic standards at Foxboro and at the Psychopathic are on much the same level. Of 17 unclassified cases, Foxboro has classified all but two. Diagnoses agree in the two institutions in 90 per cent. of cases of precox, 68 per cent. of cases of manic depressive, and in all cases of general paresis. The total agreement of 213 diagnosed cases is 77 per cent. The reasons for variation in diagnostic opinion will usually be found to be either:

1. Verbal changes, representing no real difference.
2. Variations in the evaluation of indirect evidence.
3. Cases in which different phases of a psychotic picture are seen.
4. Difference in standards of diagnosis, of which not the least is the dependence by many people upon outcome as the most important, single diagnostic standard, which I am convinced is a wrong viewpoint.

THE FREQUENCY OF FRACTURES. A RADIOLOGICAL ANALYSIS OF 1,226 CASES.

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The frequency of fractures and types of fractures of certain bones will vary, as is well known, according to the location of the hospital, the season, class of cases, and whether the clinic is in the hospital or dispensary. If the hospital is in a factory town or near a railroad certain types of fractures will predominate. If, on the other hand, the hospital is near a large tenement district where there are many children, fractures of arms and incomplete fractures will predominate. This is also true regarding infection of compound fractures, the results of which differ vastly in different parts of the world.

Fractures in dispensary cases are largely those of children; in adult cases simple fractures or fractures of the phalanges predominate. Hospital fracture cases deal invariably with more serious cases, more with the adult and aged, more with complications. A large part of the cases are the result of street or building accidents. Figures will therefore vary considerably and no report on the rarity of a fracture should be made until the literature has been carefully consulted.

Because of these facts, the following tables giving an analysis of 1,226 fracture cases were considered of sufficient interest and value to publish. They do not include dispensary cases. No one class of patients predominates. There is no particular emphasis to be laid on any single cause or condition.

Three tables are presented. The first gives an analysis of 1,226 fracture cases, with both individual bone and group percentages. The second table presents an analysis of 937 fracture cases. This is of the long bones only and gives the types of fractures and position. The third table gives an analysis of 103 dislocations. This gives the frequency of dislocations as compared with fractures.

The well-known statistics of Plagemann (Rostick clinic) Table No. III, based upon 1,393 cases confirmed by roentgenograms, has been studied and for comparison it is given here, although not in its complete form. Sheldon's statistics from the Massachusetts General Hospital are given here for comparison with Table No. II. Sheldon's series covers 57 cases of fracture of femur and 405 cases of fracture of tibia and fibula. Eisendrath quotes figures from the Boston City Hospital from a series of 38,627 fracture cases covering the period between 1864 and 1905. A modified form of this table is also presented here. This series, however, is not based on roentgenographic diagnosis, and consequently forms no true comparison with the present series. It also does not include any but simple fractures.

TABLE I.

TABLE GIVING ANALYSIS OF 1226 FRACTURE CASES.

Skull: Total number fractures, 86; percent, 7.01.	
15 parietal	17.44
6 temporal	6.97
16 frontal	18.60
15 occipital	17.44
3 malar	3.48
15 inf. maxillary	17.44
8 sup. maxillary	9.30
8 nasal	9.30
4 orbital	4.65
4 zygomatic	4.65
Vertebrae: Total number fractures, 26; per cent., 2.11.	
9 cervical	34.61
1 dorsal	3.84
16 lumbar	61.53
Humerus: Total number fractures, 60; per cent., 4.89.	
9 upper shaft	15.00
10 middle shaft	16.66
12 lower shaft	20.00
29 ends of shaft	48.33
Radius: Total number fractures, 108; per cent., 8.80.	
12 upper shaft	11.11
12 middle shaft	11.11
62 lower shaft	57.40
22 ends of shaft	20.37
Clavicle: Total number fractures, 40; per cent., 3.26.	
Scapula: Total number fractures, 16; per cent., 1.38.	
Ulna: Total number fractures, 86; per cent., 7.01.	
10 upper shaft	11.63
12 middle shaft	13.95
27 lower shaft	31.39
37 ends of shaft	43.02
Carpals: Total number fractures, 12; percent, 0.97.	
5 scaphoid	41.66
1 pisiform	8.33
2 trapezium	10.66
1 trapezoid	8.33
2 os magnum	16.66
1 cuneiform	8.33
Metacarpals: Total number fractures, 65; per cent., 5.30.	
5 first	7.69
16 second	24.61
17 third	26.15
14 fourth	21.53
13 fifth	20.00
Phalanges: Total number fractures, 44; per cent., 3.59.	
Ribs: Total number fractures, 53; per cent., 4.32.	
12 sternal	22.64
19 middle	35.84
22 vertebral	41.50

Pelvis: Total number fractures, 36; per cent., 2.93.

5	ilium	13.88
12	ischium	33.33
15	pubis	41.66
2	sacrum	5.55
1	coccyx	2.77
1	acetabulum	2.77

Femur: Total number fractures, 128; per cent., 10.44.

24	upper shaft	18.75
45	middle shaft	35.15
20	lower shaft	15.62
39	ends of shafts	30.46

Fibula: Total number fractures, 166; per cent., 13.53.

27	upper shaft	16.26
33	middle shaft	19.87
88	lower shaft	53.01
18	ends of shaft	10.84

Tibia: Total number fractures, 183; per cent., 14.92.

19	upper shaft	10.38
33	middle shaft	18.03
68	lower shafts	37.15
63	ends of shafts	34.42

Tarsals: Total number fractures, 39; per cent., 3.18.

13	astragalus	33.33
16	os calcis	41.02
4	scaphoid	10.25
3	cuboid	7.69
3	1st cuneiform	2.69
1	2nd cuneiform	——
—	3rd cunieform	——

Metatarsals: Total number fractures, 39; per cent., 3.18

8	first	20.51
5	second	12.82
6	third	15.38
8	fourth	20.51
12	fifth	30.76

Phalanges: Total number fractures, 28; per cent., 2.28.

Patella: Total number fractures, 11; per cent., 0.89.

TABLE II.

TYPE OF FRACTURE OF LONG BONES.

An Analysis of 937 Cases.

		Simple				Comminuted				Impacted			
		Tr	L	Ob	D	Tr	L	Ob	D	Tr	L	Ob	D
Clavicle 40	Proximal	4		1									
	Middle	8		3		2		2				1	
	Distal	8		4		3		4					
Humerus 60	Proximal	3	1	2		1					2		
	Middle	5		2	1	2							
	Lower	6		2	2	1		1					
	Ends	17		4	2	2		1			2	1	
Radius 108	Proximal	5	1			2			1	1		1	1
	Middle	9		1	1							1	
	Lower	26		7	2	5	1			19		2	
	Ends	14		3		2					2	1	
Ulna 86	Proximal	4	1	1		3		1					
	Middle	7		2	1	2							
	Lower	19		3		2	1				2		
	Ends	29	4			3	1						
Metacarpal* 65		2	2	1									
		6		7		3							
		5		7	2	3							
		7		3		2		1			1		
		7		1		3		1			1		
Femur 128†	Upper	6		12		3		2			1		
	Middle	22	1	13		1	1	7					
	Lower	6		7		2		4	1				
	Ends	23	3	3		4	1					5	
Fibula 166	Upper	12	1	8		4		2					
	Middle	12	1	4	2	10		3	1				
	Lower	24	1	41	3	5	1	10			1		2
	Ends	9	3	5		1							
Tibia 183	Upper	1	1	6	3	5	2				1		
	Middle	10	1	8	3	6		4	1				
	Lower	21	2	23	4	7	1	6	4				
	Ends	24	10	16	3	4		2	2	1		1	
Metatarsal* 39		5	1					1	1				
		3		1				1					
		2		2		1		1					
		3		1	1	1		2					
		7	1	3		1							

* First, second, third, fourth, fifth respectively.
† Femur: Intertrochanteric, 119; neck, 22; head, 2.

TABLE III.

DISLOCATIONS.

An Analysis of 103 Cases.

Ankle	8
Knee	5
Hip	7
Wrist	10
Elbow	7
Shoulder	28
Carpal	8
Metacarpal	1
Tarsal	10
Metatarsal	2
Pelvis	7
Rib	3
Toe	3
Vertebrae	4

TABLE III. (Plagemann.)

	Number of Cases and Percentages
Fracture of skull	59 — 4.23
Fracture of the vertebrae	23 — 1.65
Fracture of the pelvis	17 — 1.22
Fracture of the ribs	40 — 2.87
Fracture of the sternum	5 — 0.359
Fracture of the scapula	13 — 0.93
Fracture of the clavicle	54 — 3.87
Upper extremity	571 — 40.99
Radius and ulna	238 — 17.09
Radius	73 — 5.24
Ulna	31 — 2.22
Bones of hand	139 — 9.98
a Carpals	29 — 2.08
b Metacarpals	35 — 2.61
c Phalanges	75 — 5.405
Lower extremity	585 — 41.99
Patella	35 — 2.51
Bones of leg	286 — 20.53
Tibia	61 — 4.38
Fibula	57 — 4.09
Bones of foot	114 — 8.18

MASSACHUSETTS GENERAL HOSPITAL STATISTICS.

A Study of the X-Rays of Cases of Fracture of the Long Bones, etc. Russell F. Sheldon, 1917, Vol. clxxvi, No. 2, p. 61

Fifty-seven Fractures of Femur.

Head		1
Neck, impacted	5	
not impacted	5	10
Intertrochanteric		4
		15
Shaft		
Upper one-third	4	
Middle one-third	31	
Lower one-third	7	42
		57

Four Hundred and Five Fractures of Tibia and Fibula.

Upper end			
Tibia	8		
Fibula	1		
		9	
Shaft			
Both bones	94		or 23%
Tibia	32		or 7.9%
Tibia, tuber.	2		
Fibula	1		
		129	
Malleoli or lower end			
Both bones	114		or 28%
Tibia	44		or 10.8%
Fibula	108		or 26.6%
		266	or 65.4%
Multiple	1	1	
TOTAL		405	

BOSTON CITY HOSPITAL STATISTICS.
(Not X-ray Statistics.)

From 1864 to 1905—38,627 Fractures. Keen's Surgery, Vol. ii, p. 75, Fractures, Daniel N. Eisendrath.

Simple Fractures.

	PER CENT.
Radius	13.45
Humerus	10.16
Ribs	9.23
Femur	8.37
Clavicle	7.96
Fibula	6.77
Metacarpus	3.71
Tibia	3.63
Skull	2.86
Tarsals	2.73
Phalanges (upper extrem.)	2.30
Inf. maxilla	1.99
Patella	1.90
Ulna	1.82
Facial bones	1.55
Carpus	1.43
Vertebrae	0.95
Scapula	0.73
Pelvis	0.60
Metatarsus	0.48
Phalanges (lower extrem.)	0.22
Sup. maxilla	0.20
Sternum	0.11
Coccyx	0.05
Hyoid	0.002
Both bones of leg	11.20
Both bones of arm	5.10

Occasionally reports appear of fractures of a single bone or of a rare type of fracture which justifies the publication of a case. In the Radiological Department of the New Haven Hospital and Yale Medical School all fractures have been indexed since 1916 and the present tables are based on them. In comparing these four series (three of which were all that were easily accessible in the literature), a great disparity will be found, but this fact bears out the assertions made in the earlier part of this paper. It also, in a measure, justifies reporting these statistics.

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MULTIPLE SEROSITIS.

BY WILLIAM D. REID, M.D., BOSTON.

I HAVE analyzed the cases of chronic multiple serositis that came to autopsy at the Massachusetts General Hospital. My object in this study is to learn more of the disease, especially as regards diagnosis. The cases are not listed as "multiple serositis" in the autopsy records, but I have selected all cases in which the anatomical diagnosis contains the group of "chronic pleuritis, adhesive pericarditis, perihepatitis, and perisplenitis." One or more of the above pathological findings are present in a larger number of cases, but I have limited the study to those in which the complete group is present. There are 15 such in the 3900 autopsies, making the incidence of this disease just under .4%. It is probable that this figure is unduly low as the selection of only those cases in which there were definite fibrous adhesions in all these four serous membranes may have excluded some cases coming to section in the stage of acute inflammation. Also it should be realized that many more cases appear in the clinical records of the hospital, but these did not terminate fatally while in our wards, or else postmortem examination was not obtained.

In the course of teaching I have found that some of the students did not include multiple serositis in the differential diagnosis of ascites, and in fact had not as yet learned of the disease. This was the less disappointing to me

when I discovered that some medical textbooks do not describe the condition. Multiple serositis appears in the literature under many titles; thus, Howard Fussell, in his sixth edition of Tyson's Practice of Medicine, lists the following synonyms: Multiple hyaloserositis zuckergussleber (iced liver), hyperplastic perihepatitis, pericarditic pseudocirrhosis of the liver, indurative mediastinopericarditis, and polyorrhomenitis. Pick's disease is yet another term.

Study of these fifteen cases discloses that the condition was fully appreciated only at the autopsy. In two cases, however, the clinicians discovered the adhesive pericarditis and in a third the diagnosis was "chronic fibrous peritonitis." This latter case, however, had been subjected to abdominal section for possible relief of the recurring ascites. Another case, aged 57 years, with a symptom of dull, cramplike pain in the epigastrium, was explored surgically and the presence of dense adhesions and sensation of a mass (which proved to be chronic inflammatory) at the head of the pancreas lead to a mistaken diagnosis of carcinoma of the head of the pancreas.

There were nine males and six females. The age varied from four to seventy years. In this small group no particular age period shows a preponderance; eight cases were under forty and seven above it.

As regards the history of previous infections, the frequency of occurrence of the diseases listed is as follows: Measles, 8; mumps, 6; whooping cough, 4; scarlet fever, 4; tonsillitis, 3; gonorrhea, 3; acute articular rheumatism, 2; diphtheria, 2; malaria, 1; chickenpox, 1; pleurisy 1, and "usual children's diseases," 1. In three instances previous illness was denied.

Symptoms were present thus: Dyspnea, 7 (one with orthopnea); weakness, 4; "never strong," 1; precordial pain, 3; palpitation, 3; anginal attacks, 1; edema of the feet, 1; pain in joints, 1; fever, 1; dull ache in epigastrium, 1; purpura, 1; swollen abdomen, 5.

The pericardial cavity was obliterated in seven cases and in the remaining eight the two layers were united by numerous fibrous bands. Various murmurs and thrills were present in ten of the cases, but usually did not differ in character from murmurs occurring with the endocardial lesions which were also present in these same cases. I note the presence of apical presystolic murmurs and thrills in four instances in which the autopsy disclosed some mitral endocarditis in all, but with true stenosis of the valve in but one case. In one instance a systolic murmur at the apex and transmitted to the axilla and the base of the heart was explainable by the autopsy finding of "chronic interstitial myocarditis" causing a relative mitral insufficiency. Pericardial friction rubs were detected in two cases. In but three of the fifteen cases was the heart examination completely normal.

In no instance was Broadbent's sign present. In one instance a paradoxical pulse was noted, but as the heart findings were normal save for some enlargement and a general poor quality of the sounds, this clue did not lead to a diagnosis of the adhesive pericarditis. The clinical diagnosis was "chronic fibrous peritonitis" which was correct as far as it went.

It is of interest to note the data about cardiac enlargement. In the nine cases in which the pathologist found the heart hypertrophied an endocardial lesion was present as a complication. In six instances no hypertrophy was recorded.

As regards the abdomen, I find that physical examination was normal in nine cases. Of the remaining six, five had definite ascites which was evident clinically and one showed slight ascites at the autopsy. In these six with ascites the perihepatitis and perisplenitis were well-marked, but in four cases the heart showed endocardial or myocardial lesions sufficient to be a factor in the production of the abdominal effusion. Examination of the ascitic fluid in the various cases gave the findings of a typical transudate, *i.e.*, clear, specific gravity about 1008, low cell count, etc.

One of this series of patients had a history of abdominal paracentesis performed one to four times a year over a period of about five years. This very fact should suggest the diagnosis of multiple serositis. In the case referred to I find that the pericardial sac was described as obliterated and the capsules of the liver and spleen were found to be fibrous and thickened to 5 mm., making a good example of the zuckergussleber or "iced liver", *i.e.*, like the icing on a cake.

The pleural cavities showed fibrous adhesions almost to the point of obliteration. In five cases there was also some hydrothorax on both

sides and in a sixth it was present on the right side.

A study of the cases from the pathological side shows that in seven instances the chronic multiple serositis (pericarditis, pleuritis, perihepatitis, and perisplenitis) was the primary finding and in the remaining eight it was listed as a secondary lesion. Thus it occurred with congenital stenosis of the pulmonary valve, gastric carcinoma, endocarditis of all four valves, myocarditis with aneurysm of the left ventricular wall, endocarditis and arteriosclerosis, arteriosclerosis and myocarditis, lobar pneumonia and arteriosclerosis, and fracture of the femur and chronic endocarditis, respectively.

Blood pressure was not elevated in any case. Fever varying from 99° to 102° was present in four cases.

The group of fifteen cases under discussion in this paper may be said to be characterized by pathological evidence of a previous inflammation of the pleura, pericardium, and peritoneum. And in the two with the pericardial rubs there was also some fresh lesions. In studying the detailed autopsy records of these and of other cases (I have recently examined the notes of all the hospital autopsies in which adherent pericaditis was found) one feels that he is reading of scars of several conditions which have much in common if they be not part of the same process. Thus, the adhesions may be limited to any one of the four cavities, may involve any group of these, and may or may not show attachment to the adjacent structures. In the latter instance the pathologist uses the terms mediastinopericarditis, pleuropericarditis, etc.

In an exhaustive article on multiple serositis Kelly,[1]* of Philadelphia, offers as probable cause the occurrence of infection by an organism of relatively low virulence. The patient survives and fibrous adhesions are formed at the site of the inflammatory process. No one organism is accused. In fact, little data is available on the bacteriology of the condition as the organisms commonly die off before the stage of fibrous adhesions is reached. This view of the etiology appears sound to me.

The same author quotes from a paper by Clark[2] to show why the process centers about the central tendon of the diaphragm and extends to the structures above. "Fluids and solids may pass through the endothelial layer of the peritoneum, the fluid in many places, the solid particles only through the central tendon of the diaphragm. Minute particles are carried in an incredibly short time from the peritoneal cavity through the diaphragm into the mediastinal lymph vessels and glands, and thence into the blood circulation, by which they are distributed to the abdominal organs, to appear in the collecting lymph glands of these organs. The leucocytes are largely the bearers of foreign bodies from the peritoneal cavity through the diaphragm into the mediastinal lymph vessels and thence into the blood circulation. There is normally a force in the peritoneal cavity which carries the fluids and foreign particles toward the diaphragm, regardless of the posture of the patient, though gravity can greatly favor or retard the current." The experimental work of B. H. Buxton and J. C. Torrey[3] confirms this picture of the physiology of absorption from the peritoneal cavity.

It is probable that at times the process may start in one of the serous membranes above the diaphragm and work downward. That extension may occur by continuity, however, is held to be uncommon by W. H. Robey in a recent study of acute pericarditis.[4] Perhaps the truth of Dr. Robey's opinion is one reason that acute pericarditis is so much more common than involvement of the group of serous membranes. Cases with the adhesions extending to adjacent structures as from the pericardium to the mediastinum and to the anterior thoracic wall are obviously extensions by continuity.

Conclusions. This study leads me to the following conclusions:

Chronic multiple serositis presents considerable diagnostic difficulties. This is particularly true in the coexistence of other diseases.

Both history and symptoms may fail to suggest this condition.

Presystolic murmurs and thrills may be heard over the cardiac apex in the absence of stenotic change of the mitral valve as disclosed at autopsy.

Broadbent's sign and paradoxical pulse may both be absent.

Ascites may or may not be present. A history of the recurrence of abdominal effusion over a long period, perhaps of years, should suggest chronic multiple serositis.

The condition is probably due to the occur-

* One interested in further details on multiple serositis should read Kelly's article.

rence of an infection of a virulence sufficiently low to permit the survival of the patient and the healing of the inflammatory lesions by fibrous adhesions.

The physiology of absorption from the peritoneal cavity as described by Clark, Buxton, and others, offers further light on the development of chronic multiple serositis.

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[3] Buxton, B. H., and Torrey, J. C.: Jour. Med. Research, 1906, Vol. xv, p. 3; Buxton, B. H.: Jour. Med. Research, 1907, Vol. xvi, p. 17; Jour. A. M. A., 1907, Vol. xlviii, p. 1528.
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Book Reviews.

Aids to Rational Therapeutics. By RALPH WINNINGTON LEFTWICH, M.D., C.M., M.R.C.S. New York: William Wood & Co. 1918.

In presenting the subject of therapeutic treatment, the most practical and scientific method is to group diseases of allied pathology and those which require similar treatment. It is this unique arrangement which makes *Aids to Rational Therapeutics* unusually valuable. In this book, diseases are divided into forty groups on this basis, and those which cannot be so classified are considered in a separate section. By this method the student is able to learn at one time the treatment applicable to a number of diseases, and can master separately the modifications in treatment necessary in some instances. This method not only saves time and labor, but also presents a broader outlook than can be acquired by studying each disease separately. The sections dealing with Automatic Habit, the Hyperaemic Group, and Insanity are of interest from the standpoint of general therapeutics. The volume includes a table of pharmacopoeial equivalents for the benefit of American readers.

Compendium of Histopathological Technic. By EMMA H. ADLER. New York: Paul B. Hoeber. 1918.

It is helpful to students untrained in laboratory work to be able to refer to an account of methods which others have found most satisfactory. In this volume, *Compendium of Histopathological Technic*, the experiments made in the pathological laboratory of the Presbyterian Hospital have been made available. Various procedures are described with a simplicity, yet with sufficient detail, to make the subject comprehensible to the beginner and to prepare him for more exhaustive treatises on this subject. General directions are given for the fixation of tissues, either in Zenker's fluid or in 10 per cent. formalin. The former is best adapted to frozen sections, the preservation of fat and myelin, and certain clinical reactions; the latter, to histological and pathological investigation. Various methods of preparing paraffin, frozen, and celloidin sections are explained. The Jores-Klotz method of preserving museum specimens is considered in the appendix.

The Nature and Science of Things. By HUGH WOODS, M.D., B.A., F.R.C.S. New York: William Wood & Co. 1918.

The Nature and Science of Things has to do with a discussion in eleven chapters of space: matter, motion, time; states of matter; chemical atoms and molecules and chemical combination; modes of motion; heat; light; electricity and magnetism; sound and other physical phenomena; astronomy and gravitation; life and vital processes; the senses and the mind, and the relation of these subjects to every-day life. The main ideas are based upon one of the poems of Lucretius, pupil of Epicurus, written two thousand years ago and bearing the same title as this volume. It is an effort on the part of the author, who uses excerpts from the poem in the beginning of each chapter, to show that energy, as such, can be derived only from pre-existent energy transferred from matter to matter; and an attempt is made to enlighten the general reader as to the unlimited energy in the universe and the uses to which a great deal of latent energy may be applied. It is not, however, a remarkable explanation.

The Human Machine and Industrial Efficiency. By FREDERIC S. LEE, Ph.D., LL.D. New York and London: Longmans, Green and Company. 1918.

The conception of the human element in industry as a physiological process is both practical and scientific, and essential to the attainment of highest industrial efficiency. At the present time, the course followed by the industrial managers is still empirical and traditional, based on past experience rather than on scientific principles. The volume, *The Human Machine and Industrial Efficiency*, presents various aspects of human activity, such as the qualifications of workers, the relation of output and fatigue, the importance of rest periods from the point of view of economy, the problem of labor turnover, and the industrial efficiency of women compared with that of men. The value of industrial medicine and welfare work is recognized as indispensable to the advancement of health and productivity. This book presents many facts relating to war industries, but the principles underlying them are applicable and vital to all industries.

THE BOSTON
Medical and Surgical Journal

Established in 1812

An independently owned Journal of Medicine and Surgery, published weekly under the direction of the Editors and an Advisory Committee, by the BOSTON MEDICAL AND SURGICAL JOURNAL SOCIETY, INC.

THURSDAY, SEPTEMBER 23, 1920

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THE ACTIVITIES OF THE MASSACHUSETTS GENERAL HOSPITAL.

THE one hundred and sixth annual report of the trustees of the Massachusetts General Hospital includes in Section A an account of the activities during the year 1919 of the General Hospital in Boston, the McLean Hospital and the Convalescent Hospital in Waverley, and in Section B, a report of the medical and surgical affairs of the General Hospital and a report of the General Executive Committee. The report shows that considerable progress has been made in the various departments of the hospital. During the year most of the members of the staff and officers of the hospital who have been absent upon duties connected with the World War have returned to resume their activities at the hospital. In 1919 there were admitted for treatment in the wards, 6,074 patients; in the emergency ward, 5,459; in the Out-Patient Department, 27,948; in Phillips House, 364 medical, 1,205 surgical, and 139 obstetrical patients. In the Social Service Department of the hospital the most significant event of the year was the act of the Trustees assuming its financial and administrative control. The total expenses for the administration of the General Hospital amounted to $557,077.99 in 1919; of the Out-Patient Department, $109,583.58, and of Phillips House, $259,396.52. Tables of medical and surgical statistics are presented in terms of the International Classification and also according to the Sections of the Classification of Diseases in use at the Hospital. In an appendix are given brief abstracts of operated cases resulting in death.

At the McLean Hospital, in spite of the difficulty in obtaining nurses, the care of the patients has been maintained at its usual high standard. An agreement made with the Army School of Nursing, Medical Department, United States Army, whereby beginning in January, 1920, ten nurses will be sent to the hospital every three months during a period of about two years for training in mental and nervous diseases, temporarily alleviates the difficulty of securing adequate nursing service. Although the usefulness of the institution has not been curtailed so far as the treatment of patients is concerned, the rigid economy which has been necessary has hindered the research work which should be made possible. The total number of patients under treatment at the McLean Hospital in 1919 was 354. The hospital has served the public to the limit of its capacity and it has been necessary to decline many applications because of lack of room. Additional cottages for single patients are greatly needed. The McLean Hospital is the institution to which the average citizen turns for help, and it answers a special need, standing as it does between the small private institutions where the rates are high and the state hospitals. The psychological department now carries on experimental work with all admissions capable of the necessary cooperation. Routine use is made of the Stanford Binet Scale and of the free association experiment. Other research work includes study in the pathology of the simple reaction process, in conditioned reactions, special personality studies, graphic records of station, and a problem in the threshold of consciousness. The report states that the most suitable means of extending the scientific services of the hospital are (1) to organize a department especially for physiological chem-

istry to work in coördination with the psychological service, and (2) to provide a certain amount of assistance (partly clerical and partly technical) which will make most promptly available to the institution the results of its rapidly accumulating material. An endowment fund of two hundred thousand dollars is needed for the maintenance of the scientific laboratories and workers of the hospital.

The report of the General Executive Committee of the Massachusetts General Hospital indicates that new lines of progress have been undertaken by various departments. The year has witnessed the further development of a new policy,—that of seeking patients instead of being content with treating those who come to the hospital of their own accord. This tendency has increased for the most part unconsciously and without any deliberate intention on the part of the hospital. Up to 1905 the hospital accepted suitable patients who sought its aid, but never sought them; in that year the first aggressive attack was made on the tuberculosis problem. In 1916, after the infantile paralysis epidemic, this policy developed to a considerable degree, and through the Social Service Department children were sought out who had passed the acute stages of the disease but needed exercise, massage, splinting, and apparatus or operation for the prevention of crippling, lameness, and deformity. This principle of prevention has been exemplified in tuberculosis classes, in the poliomyelitis clinic, in the syphilis clinic, and to some extent in the children's clinic. Whether or not this policy should be confirmed and extended is a matter for study and consideration.

A second policy, originated at the Massachusetts General Hospital,—that of separating special diseases from the general clinics,—has been extended, with obvious benefit to patients. First, tuberculosis; then syphilis, gonorrhea, diabetes, stomach troubles, poliomyelitis, children's nutrition, speech defects, asthma, and heart disease now are being treated separately. In many instances class methods have been found most effective, for by this means not only is the time of the physician saved, but patients often instruct and encourage each other by testifying convincingly of their own improvement. Within such clinics as the children's, the nerve, the orthopedic, and the genito-urinary, the same principle of assembling like groups of patients is being carried out. The danger of this method to physicians lies in the fact that it tends to narrow their interests to their own specialties. This can be avoided, however, by a system of rotation in the special clinics so that each physician may serve an apprenticeship in a special clinic, later taking charge of it for a time, and then teach an understudy and himself become in turn an understudy in a second special clinic. Such a method would give physicians training unequalled in this vicinity.

The year 1919 marks also the real beginning of organized clinical research at the Massachusetts General Hospital, under the directorship of Dr. David Edsall. This work was planned in 1917, but was delayed for two years because of the war. By means of the efforts of this group of men closely connected with each other and devoting their full time to research, encouraged and supervised by a director, research has become organized rather than sporadic. Studies begun on patients in wards have been completed by careful follow-up work and observation after discharge. In the Medical Laboratory studies are being made of a number of special problems, including diabetes mellitus, nephritis, and blood fat and blood sugar in a variety of conditions, the hydrogen ion concentration of pneumonic exudates, the basal metabolism in thyroid disease, and the respiratory exchange in infants.

Among the special studies which are being made by members of the Surgical Division are a careful analysis of the results of the treatment of surgical affections of the stomach and duodenum, an analysis of the results of the treatment of peripheral nerve lesions, an analysis of the treatment of exophthalmic goitre, and the treatment of bone fractures. In order to establish the Carrel-Dakin technique in the Hospital, it was requested of the Rockefeller War Hospital that there be admitted to its wards for study and instruction a member of the staff, a resident surgeon, a nurse, and a chemist. These four individuals, after learning the essentials of the treatment, have established it at the Massachusetts General Hospital, where it has been administered satisfactorily for two years. Clinical as well as laboratory researches have been established, and among the most important subjects assigned for special research may be mentioned surgery of the brain and spinal cord, cancer of the rectum, of the uterus, of the face, mouth, and tongue, surgery of the chest, empyema, and the treatment of septic hands.

A series of clinical meetings for their own members, with papers and demonstrations, have been begun by the Medical Out-Patient Staff, and arrangements have been made so that the Out-Patient men may see with the house staff their most interesting cases, and consultations may be held by the attending staff with members of the House Staff.

The Industrial Clinic has been reopened for the past year, the expenses of conducting it now being met by the Medical School from the funds for Industrial Medicine. The Poliomyelitis Clinic has continued treatment of children who were afflicted with the epidemic of 1916. A new clinic has been formed for the treatment of anaphylactic cases. The Nerve Department has attempted to keep itself united as closely as possible with the rest of medicine and to enlarge its activities by providing for interchange of information with the basic sciences of physiology and pathology. The Department of Syphilis has treated during the year 1,782 more patients than in 1918. The Pathological Laboratory has carried on its usual routine, bacteriological, chemical, microscopical, and pathological examinations in connection with the study of diseases of patients. The Roentgenological Department received 9,256 cases in 1919.

This annual report of the Massachusetts General Hospital has revealed a number of interesting and comparatively new phases of hospital administration which will be significant in determining the future policies of that institution.

WATERING PLACES AND CLIMATIC RESORTS OF THE CZECHOSLOVAK REPUBLIC.

It is not generally known that there are included in the Czechoslovak Republic over one hundred and seventy mineral and curative springs equal in therapeutic value to any in the world. Hitherto, only such towns have been known as Karlovy Vary and Marianske Lazne, in which particular interest has been taken by the Austrian governments because of their large German majority. Some of the springs in Czechoslovakia are unique, such as the ferrugineous cold carbonic acid water springs at Frantiskovy Lazne (Franzensbad), the ferrugineous hyperthermal waters at Vyhne and Sliac, the sulphur hyperthermal waters in Pistany of which the temperature exceeds sixty Celsius, bicarbonate waters, and the chlorinated soda cold carbonic acid water springs at Luhacovice. In the Tatra Mountains, reaching to a height of twenty-six hundred meters, there can be found comfortable resorts such as Tatranska Lomnica, Strbske Pleso, and others, situated in the midst of magnificent natural scenery. A number of the most important watering places have been described in a pamphlet published by the Ministry of Foreign Affairs and edited by Dr. A. Pohorecky, at Frantiskovy Lazne.

The waters of Frantiskovy Lazne are valued chiefly for their rich contents of ferrugineous mineral mud. The mud and carbonic acid baths, poultices, gargarisms, inhalations and permanent irrigations available at this resort have been found effective in the treatment particularly of the diseases of women and of heart diseases. A second watering place is at Sv. Jachymov, situated seven hundred and twenty-two meters above the sea, with subalpine climate and fresh mountain air. A strongly radioactive spring comes forth from a mine of about three hundred meters in depth. Skin diseases, psoriasis, pruritus, eczema, rhinoscleroma, malign tumors, chronic rheumatism of articulations and muscles, neuralgia, lymphadenitis, and torpid exudations are treated here with baths, poultices, and radium rays. Karlovy Vary, situated three hundred and seventy meters above the sea in a picturesque valley surrounded by forest covered hills five hundred meters high, is noted for its sulphate, chlorinated, bicarbonated soda hyperthermal water springs, with a temperature of 32.7-70.1 C°, and offers treatment for chronic catarrh of the stomach, intestines, and bladder and for catarrhal jaundice, chronic hyperaemia of the liver, gall stones, gout, diabetes, and obesity. In the heart of a beautiful valley in Bohemia, six hundred and forty meters above the sea, lies Marianske Lazne, with its sulphate, chlorinated, bicarbonated, cold carbonic acid water springs. The baths, drinking fountains, and river baths of Podebrady, situated in the plain of Labe (Elbe) rich in meadows and forests of pine and leaf trees, are found beneficial by many sufferers from disease of the heart and arteries, diabetes, and chronic diseases of the skin. In Moravia there is Luhacovice, situated in a valley close to the Carpathian Mountains and visited annually by approximately fourteen thousand persons.

In Slovakia the watering places and climatic

resorts are situated on the south slopes of the high Tatra Mountains, which form a beautiful mountain chain separating Poland from the Czechoslovak Republic. Among the most renowned of the resorts in Slovakia are Lubochna, situated on the river Vale, Piestany, with its rich sulphur, hyperthermal water springs 60-70° C and extremely radioactive; Sliac, on the river Hron; Sthrbske Pleso on a lake at the height of thirteen hundred and fifty meters; Tatranska Lomnica, a sunny resort over eight hundred meters above the sea, and Trencanske Teplice, situated in a deep wind-protected valley among the Carpathian Mountains. At Prague, in a large park on the south slope of Vysehrad, there are four large buildings devoted to the treatment of internal diseases, to surgery, and to physiotherapy. The sanatorium is equipped with seven operating halls, chemical and microscopic laboratories, roentgen rays, a hydropathic department with mud, carbonic acid baths and hot air treatment, massage, inhalation chambers, electro-pneumatic treatment, phototherapy, and a gymnasium furnished with most modern apparatus. The opportunities afforded by the waters and springs in the Czechoslovak Republic should be more widely known in this and in other countries.

MEDICAL NOTES.

Medical Education in Peking.—The opportunities for medical education in Peking have been greatly increased during the last fifteen years. In 1906, the Peking Union Medical College was founded, and was maintained until 1915 by missionary associations of America and Great Britain. During the past five years, when it has been controlled by the China Medical Board of the Rockefeller Foundation, there has been a great improvement in the teaching organization and in the accommodation for students. In 1917 the pre-medical school was opened; in 1919, the medical school, and it is expected that the new hospital and the training school for nurses will be ready some time this year. The Chinese students begin this course of training by taking up the three-year course in the pre-medical school, which admits thirty-five students selected by examination. The English language is used, and instruction is given in biology, physics, chemistry, mathematics, Chinese, English, and one other European language. After graduating from the pre-medical school, the student takes the first-year course in the medical school, which includes one year spent either as a hospital interne or as an advanced laboratory worker. On the staff of the medical school there are thirty-three medical men, including eight of Chinese nationality. The anatomical section is responsible for the teaching of histology, and offers also optional courses in comparative neurology, comparative dental anatomy, physical anthropology, and haematology. In the department of physiology are taught also materia medica, pharmacology and toxicology. Instruction is continued in the Chinese, English, and French or German languages. There is also a department of social and religious work. Opportunity is provided for a limited number of students to earn a part of their expenses by serving in college libraries and laboratories. The schools are open to women as well as to men.

American Gift to the Institute of Bacteriology at Lyons.—The sum of one hundred thousand francs has been given by Mr. M. Douglas Flattery to the Institute of Bacteriology at Lyons for the establishment of an annual scholarship for the benefit of a student who will specialize in laboratory work on the bacteriology of infectious diseases.

Award of a Mary Kingsley Medal.—The Liverpool School of Tropical Medicine has awarded a Mary Kingsley medal to Dr. Charles Wardell Stiles, United Public Health Service, for his work on the eradication of hookworm disease.

Laboratories for Research on Tropical Disease.—There have been opened at Liverpool new laboratories for research on the origin and treatment of tropical diseases. They are named in honor of Sir Alfred Jones of Liverpool, who made provision in his will for the erection of a laboratory and for the buildings in which the work has hitherto been carried on.

Typhus Fever Prevention.—That poverty, overcrowding, and dirt are intimately associated with the spread of typhus fever has been a matter of common knowledge for some time;

yet it was only ten years ago that Nicolle pointed out that the louse plays an important part in the transmission of the infecting agent of typhus fever and relapsing fever. In the British Isles little practical interest was taken before the war in preventing the extension of typhus in countries where it is endemic and widely prevalent; but when it became one of the greatest plagues in war-stricken countries it became necessary to find some means of checking the epidemic on a large scale. When, early in March, 1915, the British Mission reached Serbia, the epidemic was raging to such an extent that in a period of three or four months there were probably 400,000 cases and 120,000 deaths. In a book describing the work carried on by himself and his colleagues, Dr. William Hunter has discussed in detail the preventive measures which were adopted. As it was considered particularly important that the movements of people be checked as far as possible, all railway passenger traffic was suspended excepting one train in twenty-four hours. This was only one of the measures which were employed successfully. Dr. Hunter's book on this subject, "The Serbian Epidemics of Typhus and Relapsing Fever in 1915," contains a great deal of practical and statistical information of value in the prevention of typhus fever.

MISSION HOSPITALS IN CHINA.—The attitude of the Chinese people toward mission hospitals has been considerably altered in the course of the last twenty years. There were only twenty-nine of these hospitals in China twenty years ago. They were regarded with distrust by the natives, and the chief object of the medical staffs was to gain the confidence and friendship of the patients. The conditions of hygiene, nursing and treatment were exceedingly defective and the work was carried on amid many difficulties. Since 1900, one hundred and forty-eight new hospitals have been built, as evidence of the changed attitude of the Chinese people. The benefits of treatment have become so widely recognized that today there is a large number of students, both men and women, studying medicine in the new medical schools established in their native land. An inquiry into the scientific efficiency of mission hospitals in China has been made by Mr. Harold Balme, F.R.C.S., Dean of the School of Medicine of the Shantung Christian University. His conclusions, summarized in a report presented to the annual conference of the China Medical Missionary Association, have been reviewed as follows in the *British Medical Journal*:

"The report shows under what difficulties the work of the hospitals has hitherto been conducted, and indicates that much improvement has still to be effected. Only 63 per cent. of the 193 hospitals are yet able to supply the majority of their patients with clean bedding, and seventy-two possess no bedding at all, or only sufficient for a few of the dirtiest or poorest of their patients. In 70 per cent. the water supply comes from surface wells, and in 33 per cent. it receives no preliminary filtration or boiling; in only 51 per cent. are the patients regularly bathed, while sixteen hospitals report that they possess no bath at all. Sixty-five per cent. have no isolation block; 37 per cent. are not screened for protection from insects; 67 per cent. of the hospitals are dependent for sanitation on ordinary Chinese latrines, usually unscreened. The figures given with regard to the staffing show that there is only one mission hospital bed to every 26,640 people in China; and four hospitals out of five, with an average accommodation of seventy beds, had only one foreign or foreign-trained doctor; 60 per cent. have not more than one trained nurse, 69 per cent. no regular system of night nursing, and 34 per cent. have no nurse at all. It appears from the report that 200 more foreign doctors, 200 more Chinese doctors, 150 new foreign nurses, and 400 Chinese nurses are urgently required."

ANNOUNCEMENT OF MEDICAL LECTURES.—The following announcement of British medical lectures has been made: The Harveian Oration of the Royal College of Physicians, London, will be delivered by Sir Frederick Andrews on October 18; the Horace Dobell lecture by Sir William Leishman on November 2; the Bradshaw lecture by Dr. C. B. Wall on November 4; and the FitzPatrick lectures on the History of Medicine by Dr. E. G. Browne, of Pembroke College, Cambridge, November 9 and 11.

GIFT TO THE UNIVERSITY OF ADELAIDE MEDICAL SCHOOL.—The sum of £15,000 has been contributed by the family of the late Sir John Darling, of Adelaide, South Australia, towards the cost of erecting a new building for the medical school of the University of Adelaide. It

is estimated that the erection and equipment of the building will cost approximately £25,000. It will be designed to accommodate the departments of physiology, biochemistry, and histology, and the medical library.

Medical Reports from India.—A number of interesting announcements of health conditions in India have been published in *The British Medical Journal*. The first note states that the most conspicuous feature of the administration of the Central Provinces and Behar in 1918-1919 was the disturbing effect of the epidemic of influenza, which, to a greater or lesser degree, brought the work of almost every department to a temporary standstill. From this cause alone five and one-half per cent. of the population died. The effects of the epidemic will be felt for many years.

A second note reports that a Red Cross Society has been established for India by an Act of the Viceroy's Legislative Council. It is quite independent of the British Red Cross Society and Order of St. John of Jerusalem. The Society is organized on a provincial basis for work both in time of war and in time of peace, and has been admitted to the League of Red Cross Societies.

A third announcement reports the maternity and infant welfare work done by Lady Chelmsford in India. An institute has been opened in Delhi for training the health and maternity supervisors and health and maternity visitors, the former having a training of a year and the latter six months. Those who cannot afford to pay for their training receive forty rupees a month from the association founded by Lady Chelmsford, on condition that they undertake to serve it for three years after they have received their training.

Obituaries.

ADAM POLITZER, M.D.

The following obituary of Dr. Adam Politzer was written by Sir StClair Thomson and published in the issue of *The British Medical Journal* for August 21, 1920:

"Adam Politzer was what the French call a *grand maître* in modern otology. Possessed of a charming individuality, he was thoroughly equipped in his youth, and started early on a career in which he became so distinguished. He was well advised by his teachers, who appreciated his talents, and he directed his attention to otology from his earliest years, realizing the opening there was for this specialty at Vienna. Hence he passed several years travelling over Europe, studying acoustics with Helmholtz, histology with Kölliker, and physiology with Ludwig. In Paris he worked in the laboratory of Claude Bernard, and then he came to London to study with Toynbee. There can be little doubt that it was his English teacher who inspired him with his appreciation of the pathological anatomy of the mastoid. Politzer returned to Vienna in 1861, and it was sufficient for him to show his teachers the results of his scientific journeys for them to create a chair of otology, and he was elected as professor. He was not yet 30 years of age. He had only four pupils in his first course, but it is interesting to recall that one of them was Lucae, who afterwards was the well-known professor in Berlin. His name soon became known throughout the otological world, as it was early in his career that he discovered the method of "Politzerizing" the ear. His reputation as a teacher became so well known that there are few aurists who have not based themselves upon his teaching, taking his career as an example and his ideals as an inspiration.

He was a model teacher. Neat and dapper in his appearance, with sparkling intellectual dark eyes and a musical caressing voice, he quickly gained the goodwill and admiration of every pupil. And, in return, he did not forget his pupils, to whom he was devoted. Although I worked with him only for one semester, he presented me with a beautiful dissection of the middle ear, made with his own hands, as a souvenir, which I still treasure. He was enthusiastic and patient, and, although he had only eight beds and had to give his lecture in the middle of a ward, his classes were always crowded. These classes were held every day of the week, except Saturday and Sunday, from 12 to 1, and although he had a private practice to which patients flocked from all over the world, he was seldom five minutes late, and often remained until 1.30 and nearly 2. The course lasted six weeks and cost 20 florins, or, at least, it did so when I attended it in 1893. As Anglo-Americans formed a large part of these classes, most of his teaching was given in excellent English, but I have heard him speak fluently in German, French, Hungarian, Bohemian and Italian during the one lesson. He had other talents: he wrote much; his textbook and his methods are known throughout the civilized world; he was always courteous; he had charm; he was a traveller; he was an artist of talent; he was a collector and connoisseur in art, and his skill with the pencil was a valuable asset in his teaching. His hospitable home in the Gonzagagasse illustrated the two sides of his life; there he delighted to

show his superb collection of pictures and also to demonstrate his anatomical specimens.

He loved to do the honors to his museum, to show bric-à-brac he had picked up in his many visits to Italy, and to demonstrate his innumerable pieces of normal and pathological anatomy, dissected mastoids, preparations of the labyrinth, or microscopical sections. He was an immense worker; he had a lovable nature; and his life was full and happy, but doubtless his latter years were clouded with the horrors of war. No one, particularly with his wide international friendships, could have deplored the war more than Politzer. While it was in progress I had news of the old professor from a Scandinavian colleague who had been in and out of Vienna several times during the war. He told me coal was so scarce in that city that Politzer, for the sake of warmth, had betaken himself to a boarding-house. Every day, during the war winters, he walked from his boarding-house to his beautiful apartment. There, in spite of his four-score years, he still occupied himself with art and research in otology. . . . . He was indeed a *grand maître*."

ALBERT JOHANN HAHN, M.D.

DR. ALBERT JOHANN HAHN, born in Germany on October 4, 1852, died at his country home in Sharon, Vermont, August 1, 1920, of a severe cerebral hemorrhage. At an early age he entered the college at Hildesheim, Germany (1867-74). Coming to the United States, he first completed a course at the New York Eclectic Medical School in 1880, from which he graduated M.D. In 1884, he successfully completed a course at the College of Physicians and Surgeons, Boston. In 1885, Dr. Hahn obtained another medical degree, this time from Dartmouth Medical College, Hanover, N. H. In 1886, he specialized in surgery, gynecology, clinical medicine, physical diagnosis and obstetrics at the New York Polyclinic. .

For a number of years he was an instructor of physicians in the College of Physicians and Surgeons, Boston. From here he went to San Antonio, Texas, specializing there in surgery. Coming to Newark, N. J., he was associated with Dr. Edward J. Ill on the staff of St. Barnabas' Hospital.

Malarial troubles caused his removal to Vermont thirteen years ago. Two years of retirement on his little farm so improved his health that he returned to the medical profession, taking up the practice of Dr. E. Allen of Pattenburg, N. J. There he remained in active practice until July 1, 1920, when he made final preparations for a return to his loved New England farm where his death occurred.

Besides his medical abilities, he was extremely well read in the arts and sciences. He was a lover of Nature. He had a fondness for all animal kind. Besides his native language, he spoke and wrote fluently, English, French, Spanish and Latin, while works in Greek and Italian were readily perused by him.

He was a member of many medical societies and lodges at various times, continuing until his death one of the Lehigh Valley Railway's surgeons and a member of The Massachusetts Medical Society.

SOCIETY NOTICE.

ESSEX NORTH DISTRICT MEDICAL SOCIETY.—A quarterly meeting of the Society will be held at Amesbury Club, 18 Main Street, Amesbury (Tel. 303), Wednesday, September 29, 1920.

Dinner will be served at Star Restaurant, 20 Main Street (Tel. 426-M), at 1 o'clock, sharp.

By request of the Permanent Committee on Cancer of the State Society, as directed by the Council of the Massachusetts Medical Society, this meeting will be devoted to the subject of cancer, and F. B. Lund, M.D., Surgeon to the Boston City Hospital, will present a paper upon "The Early Recognition and Treatment of Cancer from a Surgical Viewpoint" (40 minutes). Discussion is invited (five minutes each).

The President or Vice-president of the parent society will be our guest.

Since the American Medical Association holds its annual session in Boston next June, the state officers wish that all desirable non-fellows be invited to appear before the Censors in November in order that all Massachusetts physicians may be entitled to all privileges of the June meeting. Please notify your secretary of all such.

The next meeting of the Censors will be held at Hotel Bartlett, Haverhill, Thursday, Nov. 4, 1920, at 2 P.M., sharp. A candidate for admission should bring his diploma.

D. D. MURPHY, M.D., *President*,
J. FORREST BURNHAM, M.D., *Secretary*.
301 Essex St. (Room 411), Lawrence.

RECENT DEATHS.

DR. HERBERT TERRY died after a long illness at his home in Providence, August 24. He was in his sixty-sixth year. Dr. Terry was born in Fairhaven, Massachusetts, on December 8, 1854, and was graduated at Cornell in 1876. Later he entered Harvard Medical School and received his medical degree there in 1880.

Dr. Terry began his medical practice in Providence. He became identified with the Rhode Island Hospital in 1883, serving in various capacities for 23 years, after which he was made consulting physician. He was physician in the Out-Patient Department from 1883 to 1888, visiting physician from 1891 to 1902, and surgeon from 1902 until recently.

Announcement has been made of the death of DR. O. SCHULTZ, professor of anatomy and physiology in the University of Würzburg, at the age of sixty-one years.